



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,025	02/01/2001	Bruce I. Rosen	38,097	8274

4249 7590 06/30/2003

CAROL WILSON
BP AMERICA INC.
MAIL CODE 5 EAST
4101 WINFIELD ROAD
WARRENVILLE, IL 60555

EXAMINER

OH, TAYLOR V

ART UNIT	PAPER NUMBER
----------	--------------

1625

DATE MAILED: 06/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

09/775,025

Applicant(s)

ROSEN, BRUCE I.

Examiner

Taylor Victor Oh

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1623

The Status of Claims:

Claims 1-20 are pending.

Claims 1-20 have been rejected.

DETAILED ACTION

1. Claims 1-20 are under consideration in this Office Action.

Priority

2. Acknowledgment is made of applicants' claim for foreign priority under 35 U.S.C. 119 (a)-(d).

Drawings

3. The drawings filed on 02/01/2001 are objected by the Draftsperson (see Form PTO 948).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1623

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sikkenga et al (U.S. 5,256,817) in view of Partenheimer et al (U.S. 5,081,290).

Sikkenga et al teaches a method of purifying a naphthalenedicarboxylic acid such as 2,6- naphthalenedicarboxylic acid obtained from the oxidation of 2,6-dimethylnaphthalene (see col. 4 ,lines 27-28) by treating the impure naphthalenedicarboxylic acid with hydrogen in the presence of a hydrogenation catalyst belonging to the members of the Group VIII noble metals supported on carbon (see col. 8 , lines 51-55) having 0.1 wt % to 5.0 wt. % as well as the presence of a mixture of carboxylic acid and water (see col. 8 , lines 25-26) at a temperature of at least 500° F. (see col. 3 , lines 5-10). Concerning the amount of solvent used in the process, a suitable weight ratio of solvent to naphthalenedicarboxylic acid is 2: 1 to 20: 1 (see col. 7, lines 53-55). In the process, purified naphthalenedicarboxylic acid is recovered from the reaction mixture by cooling the reaction mixture to a temperature of from 100 to 500° F. (see col. 10 , lines 8-9).

However, the present invention differs from the reference in that the catalyst includes the Group IVB metals such as tin with an amount between 0.2 to 0.6 weight % of the total catalyst weight .

Partenheimer et al describes a process of producing an aromatic dicarboxylic acid by the oxidation of a polyalkyl aromatic compound such as 2,6-naphthalenedicarboxylic acid obtained from the oxidation of 2,6- dimethylnaphthalene (see col. 2 , table 1) in the presence of a catalyst system containing other catalysts and a heavy-metal catalyst such as tin (see col. 3 ,line 9). Furthermore, the catalyst can be present in an amount within the range of 0.5 to 10 milligram atoms per gram mole of the alkyl aromatic (see col. 3 ,lines 31-35) .

With respect to the tin with an amount between 0.2 to 0.6 weight % of the total catalyst weight, Sikkenga et al does indicate that the amount of the catalyst may be from 0.1 wt % to 5.0 wt. %. Therefore, if the skillful artisan in the art had desired to estimate the optimum range of the Group IVB metals usage in the process, it would have been obvious for the skillful artisan in the art to have used the Group VIII noble metals' range as the guideline so as to obtain the effective range of the Group IVB metals usage for the process by routine experimentation.

Sikkenga et al is directed to the process of purifying 2,6-naphthalenedicarboxylic acid obtained from the oxidation of 2,6- dimethylnaphthalene by treating the impure naphthalenedicarboxylic acid with hydrogen in the presence of the hydrogenation catalyst. Also, Partenheimer et al is drawn to the process in which 2,6- naphthalenedicarboxylic acid is obtained from the oxidation of 2,6-

Art Unit: 1623

dimethylnaphthalene in the presence of tin and other catalysts, which may influence the rate of oxidation and the selectivity of oxidation (see col. 3 ,lines 47-52).

Both references have been commonly involved in the process of making 2,6-naphthalenedicarboxylic acid. Sikkenga et al does indicate that the amount of the catalyst may be from 0.1 wt % to 5.0 wt. % ,which corresponds to the claimed range, whereas Partenheimer et al does describe the process of producing an aromatic dicarboxylic acid by the oxidation of 2,6- naphthalenedicarboxylic acid obtained from the oxidation of 2,6- dimethylnaphthalene in the presence of a catalyst system containing tin (see col. 3 ,line 9) belonged to the Group IVB metals. Furthermore, there is an equivalent teaching between both references; Sikkenga et al expressly describes the employment of the oxidation catalysts in the process ,such as cobalt, manganese, bromine-containing components (see col. 5, lines 9-14), just as Partenheimer et al has pointed out the use of the catalyst comprising soluble forms of cobalt, manganese, bromine (see col. 3, lines 31-33) during the process. In addition, the Partenheimer et al does emphasize that the catalyst containing a heavy metal compound, such as tin can be employed to control the rate of oxidation and selectivity of oxidation (see col. 6 , lines 48-53). Therefore, it would have been obvious to the skillful artisan in the art to have motivated to incorporate Partenheimer et al's tin catalyst into Sikkenga et al's catalyst for the process in order to control the rate of oxidation and the selectivity of oxidation. This is because the skilled in the art would expect the combined processes

Art Unit: 1623

to have a reasonable success shown in the Partenheimer's et al process as well as to enhance the purification of 2,6- naphthalenedicarboxylic acid.

The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Norton (U.S. 3,781,346) discloses a process of purifying naphthalene dicarboxylic acids by reacting a solid ammonium salt of the acid with steam at a temperature of from 200 to 300° C.

Albertins et al (U.S. 4,933,491) discloses a process of purifying a naphthalene dicarboxylic acid by the liquid oxidation of an alkylnaphthalene in the presence of catalyst containing a bromine containing component and a cobalt or manganese containing component.

Hayashi et al (U.S. 4,794,195) discloses a process of producing a highly pure of 2,6-naphthalene dicarboxylic acid by oxidizing 2,6-diisopropylnaphthalene in the presence of the salt of cobalt, of manganese, of cerium and a bromine compound.

Codignola (U.S. 6,160,170) discloses a process of producing mono- and polycarboxylic aromatic acids by oxidation of the corresponding precursors with molecular oxygen and air in the presence of a catalytic complex formed by the combination of metals such as ruthenium, palladium and Group VIIA and IVA of the periodic table of elements.

Yamamoto et al (U.S. 3,888,921) discloses a process of purifying 2,6-naphthalene dicarboxylic acid obtained by oxidizing 2,6-diisopropylnaphthalene by the

Art Unit: 1623

preparing an aqueous solution of a dialkali salt of the crude 2,6-naphthalene dicarboxylic acid, precipitating the dialkali 2,6-naphthalene dicarboxylate at a pH lower than 6.3, and converting the separated precipitate to a 2,6-naphthalene dicarboxylic acid.

Any inquiry concerning this communications from the examiner should be directed to T. Victor Oh whose telephone number is (703)305-0809. The examiner can be normally reached on Monday through Friday from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Alan Rotman can be reached on (703) 308-4698. The fax number for the organization where this application or proceeding is assigned is (703)308-2742.

Raylin ✓ th
6/26/03